

.Curriculum vitae Christian Puelacher

Personal information

Name: Christian Puelacher
Date of birth: 21.04.1988
Citizenship: Austria
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Education

2021 onward Residency Cardiology, University Hospital Basel
2017-2020 Residency Internal Medicine, University Hospital Basel
2013-2017 Doctoral studies, University Hospital Basel, Supervisor:
Prof. Christian Müller, Switzerland
2007-2013 Medical studies, Medical University Innsbruck, Austria
2006-2007 Community service Jugendrotkreuz Tirol, Austria
1998-2006 Akademisches Gymnasium Innsbruck, Austria

Employment history

2021 onward Residency Cardiology at the University Hospital Basel, Prof.
Stefan Osswald
2018 - now Post-doc perioperative cardiac care, Cardiovascular Research
Institute Basel, University Hospital Basel
2017-2020 Residency Internal Medicine at the University Hospital
Basel, Prof. Stefano Bassetti
2014-2017 PhD candidate at the Cardiovascular Research Institute
Basel, University Hospital Basel, Prof. Christian Müller
2013-2014 Science fellow at the Cardiovascular Research Institute
Basel, University Hospital Basel, Prof. Christian Müller
2013-2013 Study coordinator for the ISCHEMIA trial, Medical
University Innsbruck
2010-2013 Speaker at the “Institut für Studentenkurse”, Innsbruck,
group and private tutoring
2006-2007 Community service Jugendrotkreuz Tirol

Language skills

German Native
English Fluent, CAE, eight years of bilingual education
French Basic

Approved research projects

Basel Incidence, Patient Characteristics, Pathophysiology, and Outcome of Perioperative Myocardial Injury After Non-cardiac Surgery (BASEL-PMI, NCT02573532); prospective pragmatic observational study

Reliability of cardiac troponins for the diagnosis of myocardial infarction in the presence of rhabdomyolysis; retrospective cohort study

Impact of implementation of a routine screening and response system for perioperative myocardial injuries/infarctions after non-cardiac surgery (Impact-PMI); retrospective case-cohort study [2019]

Supervision of junior researchers

Master students Luca Osswald, Christina Hollenstein, Lukas Bock, Ekrem Temizel, Noemi Glarner, Saranya Thambipillai

PhD candidates Noemi Glarner, MD

Teaching activities

Academia Methods and statistics classes, POEM, Medical University Basel
Methods- and statistics classes at Cardiovascular Research Institute Basel, University Hospital Basel
Tutor at the Institute of Anatomy, Innsbruck

Industry Speaker at the “Institut für Studentenkurse”, Innsbruck

Membership in panels, boards and scientific reviewing activities

Panel work Student representative at PhD Educational Platform for Health Sciences, Basel

Chair, Advisory Board Perioperative Myocardial Infarction

Peer-reviewer American Journal of Cardiology, European Journal of Clinical Investigations, European Heart Journal

Active membership in scientific societies

None

Organisation of conferences

Courses Handling of Missing Data, June 2017
PhD Methods-Journalclub Health Sciences 2015-2017

Prizes, awards, fellowships

Grants PPHS Top-Up 2016 (9500 CHF)

Prizes Best presentation, Clinical Research Day 2017; Otto-Hess-Trainee Award, 2018; Best presentation, IGM 2019

Fellowships	VWFAWF PhD-Stipend 2016 (75000 CHF)
Industry	Roche Diagnostics (130000 CHF)
	Roche Diagnostics (150000 CHF)

Career breaks

None

Clinical experience

2021-now	Resident Cardiology, University Hospital Basel
2017-2020	Resident Internal Medicine, University Hospital Basel
2013-now	Clinical research fellow, University Hospital Basel
2012-2013	Intern at internal medicine, general surgery, dermatology, psychiatry, primary care
2009-2011	Clinical traineeships: internal medicine, general surgery, gynecology

Research output list

Peer-reviewed publications in international scientific journals

First or Co-first author publications

1. Puelacher C, Hillinger P, Wagener M, Müller C. Cardiac biomarkers for infarct diagnosis and early exclusion of acute coronary syndrome. *Herz*. 2014;39(6):1-4. doi:10.1007/s00059-014-4130-1.
2. Puelacher C, Hillinger P, Wagener M, Müller C. Use of cardiac biomarkers for the diagnosis of myocardial infarction and heart failure | Kardiale Biomarker bei Myokardinfarkt und Herzinsuffizienz. *J für Kardiol*. 2015;22(5-6).
3. Puelacher C, Rudez J, Twerenbold R, et al. B-type natriuretic peptide secretion without change in intra-cardiac pressure. *Clin Biochem*. 2015;48(4-5):318-321. doi:10.1016/j.clinbiochem.2014.12.010.
4. Sou SM, Puelacher C, Twerenbold R, et al. Direct comparison of cardiac troponin I and cardiac troponin T in the detection of exercise-induced myocardial ischemia. *Clin Biochem*. 2015;49(6):421-432. doi:10.1016/j.clinbiochem.2015.12.005.
5. Puelacher C, Lurati-Buse G, Singeisen H, Dang M, Cuculi F, Müller C. Perioperative myocardial infarction/injury after noncardiac surgery. *Swiss Med Wkly*. 2015;145:w14219. doi:10.4414/smw.2015.14219.
6. Puelacher C, Twerenbold R, Mosimann T, et al. Effects of hemolysis on the diagnostic accuracy of cardiac troponin I for the diagnosis of myocardial infarction. *Int J Cardiol*. 2015;187(1):313-315. doi:10.1016/j.ijcard.2015.03.378.
7. Gualandro DM, Puelacher C, LuratiBuse G, et al. Prediction of major cardiac events after vascular surgery. *J Vasc Surg*. 2017;217(0):833-842.e1-3. doi:10.1016/j.jvs.2017.05.100.
8. Puelacher C, Wagener M, Abächerli R, et al. Diagnostic value of ST-segment deviations during cardiac exercise stress testing: Systematic comparison of different ECG leads and time-points. *Int J Cardiol*. February 2017:1-7. doi:10.1016/j.ijcard.2017.02.079.
9. Puelacher C, Wagener M, Honegger U, et al. Combining high-sensitivity cardiac troponin and B-type natriuretic peptide in the detection of inducible myocardial ischemia. *Clin Biochem*. 2018;52(October 2017):33-40. doi:10.1016/j.clinbiochem.2017.10.014.
10. Puelacher C, Lurati Buse G, Seeberger D, et al. Perioperative Myocardial Injury After Noncardiac Surgery: Incidence, Mortality, and Characterization. *Circulation*. 2018;137(12):1221-1232. doi:10.1161/CIRCULATIONAHA.117.030114.
11. Gualandro DM, Puelacher C, LuratiBuse G, et al. Comparison of high-sensitivity cardiac troponin I and T for the prediction of cardiac complications after non-cardiac surgery. *Am Heart J*. 2018;203:67-73. doi:10.1016/j.ahj.2018.06.012.
12. du Fay de Lavallaz J, Puelacher C, Lurati Buse G, et al. Daytime variation of perioperative myocardial injury in non-cardiac surgery and effect on outcome. *Heart*. December 2018:heartjnl-2018-313876. doi:10.1136/heartjnl-2018-313876.
13. Puelacher C, Gugala M, Adamson PD, et al. Incidence and outcomes of unstable angina compared with non-ST-elevation myocardial infarction. *Heart*. 2019;105(18):1423-1431. doi:10.1136/heartjnl-2018-314305
14. Hidvegi R, Puelacher C, Gualandro DM, et al. Obesity paradox and perioperative myocardial infarction/injury in non-cardiac surgery. *Clin Res Cardiol*. 2020;online ahe. doi:10.1007/s00392-020-01605-0
15. Puelacher C, Gualandro DM, Lurati Buse G, et al. Etiology of perioperative myocardial infarction/injury after noncardiac surgery and associated outcome: a prospective observational study. *J Am Coll Cardiol*. 2020;in press.

Co-authorships

16. Stallone F, Twerenbold R, Wildi K, et al. Prevalence, characteristics and outcome of non-cardiac chest pain and elevated copeptin levels. *Heart*. 2014;100(21). doi:10.1136/heartjnl-2014-305583
17. Stallone F, Twerenbold R, Wildi K, et al. Prevalence, characteristics and outcome of non-cardiac chest pain and elevated Copeptin levels. *Heart*. 2014;100(21). doi:10.1136/heartjnl-2014-305583
18. Gualandro DMDM, Puelacher C, Mueller C. High-sensitivity cardiac troponin in acute conditions. *Curr Opin Crit Care*. 2014;20(5):472-477. doi:10.1097/MCC.000000000000132
19. Zürcher S, Honegger U, Wagener M, et al. Delayed release of brain natriuretic peptide to identify myocardial ischaemia. *Eur J Clin Invest*. 2015;45(11):1175-1183. doi:10.1111/eci.12535
20. Jaeger C, Wildi K, Twerenbold R, et al. One-hour rule-in and rule-out of acute myocardial infarction using high-sensitivity cardiac troponin I. *Am Heart J*. 2015;171(1):92-102.e5. doi:10.1016/j.ahj.2015.07.022
21. Wildi K, Zellweger C, Twerenbold R, et al. Incremental value of copeptin to highly sensitive cardiac Troponin I for rapid rule-out of myocardial infarction. *Int J Cardiol*. 2015;190(1):170-176. doi:10.1016/j.ijcard.2015.04.133
22. Hillinger P, Twerenbold R, Jaeger C, et al. Optimizing Early Rule-Out Strategies for Acute Myocardial Infarction: Utility of 1-Hour Copeptin. *Clin Chem*. 2015;61(12):1466-1474. doi:10.1373/clinchem.2015.242743
23. Twerenbold R, Wildi K, Jaeger C, et al. Optimal Cutoff Levels of More Sensitive Cardiac Troponin Assays for the Early Diagnosis of Myocardial Infarction in Patients With Renal Dysfunction. *Circulation*. 2015;131(23):2041-2050. doi:10.1161/CIRCULATIONAHA.114.014245
24. Weidmann ZMZM, Breidthardt T, Twerenbold R, et al. Prediction of mortality using quantification of renal function in acute heart failure. *Int J Cardiol*. 2015;201:650-657. doi:10.1016/j.ijcard.2015.08.097
25. Rubini Gimenez M, Twerenbold R, Jaeger C, et al. One-hour Rule-in and Rule-out of Acute Myocardial Infarction Using High-sensitivity Cardiac Troponin I. *Am J Med*. 2015;128(8):861-870.e4. doi:10.1016/j.amjmed.2015.01.046
26. Druey S, Wildi K, Twerenbold R, et al. Early rule-out and rule-in of myocardial infarction using sensitive cardiac Troponin I. *Int J Cardiol*. 2015;195:163-170. doi:10.1016/j.ijcard.2015.05.079
27. Reichlin T, Twerenbold R, Wildi K, et al. Prospective validation of a 1-hour algorithm to rule-out and rule-in acute myocardial infarction using a high-sensitivity cardiac troponin T assay. *Can Med Assoc J*. 2015;187(8):E243-52. doi:10.1503/cmaj.141349
28. Wildi K, Gimenez MR, Twerenbold R, et al. Misdiagnosis of myocardial infarction related to limitations of the current regulatory approach to define clinical decision values for cardiac troponin. *Circulation*. 2015;131(23):2032-2040. doi:10.1161/CIRCULATIONAHA.114.014129
29. Meller B, Cullen L, Parsonage WAWA, et al. Accelerated diagnostic protocol using high-sensitivity cardiac troponin T in acute chest pain patients. *Int J Cardiol*. 2015;184C(1):208-215. doi:10.1016/j.ijcard.2015.02.006
30. Tanglay Y, Twerenbold R, Lee G, et al. Incremental value of a single high-sensitivity cardiac Troponin I measurement to rule-out myocardial ischemia. *Am J Med*. 2015;128(6):638-646. doi:10.1016/j.amjmed.2015.01.009
31. Nestelberger T, Wildi K, Boeddinghaus J, et al. Characterization of the observe zone of the ESC 2015 high-sensitivity cardiac troponin 0 h/1 h-algorithm for the early diagnosis of acute myocardial infarction. *Int J Cardiol*. 2016;207:238-245. doi:10.1016/j.ijcard.2016.01.112
32. Lee G, Twerenbold R, Tanglay Y, et al. Clinical benefit of high-sensitivity cardiac troponin I in the detection of exercise-induced myocardial ischemia. *Am Heart J*. 2016;173:8-17. doi:10.1001/jamacardio.2016.2882
33. Boeddinghaus J, Reichlin T, Cullen L, et al. Two-Hour Algorithm for Triage Towards Rule-Out

- and Rule-In of Acute Myocardial Infarction by Use of High-Sensitivity Cardiac Troponin I. *Clin Chem*. 2016;62(3):494-504. doi:10.1373/clinchem.2015.249508
34. Mauermann E, Puelacher C, Buse GL, Lurati-Buse G. Myocardial injury after noncardiac surgery: an underappreciated problem and current challenges. *Curr Opin Anaesthesiol*. 2016;29(3):403-412. doi:DOI:10.1097/ACO.0000000000000336
 35. Wildi K, Twerenbold R, Jaeger C, et al. Clinical impact of the 2010–2012 low-end shift of high-sensitivity cardiac troponin T. *Eur Hear J Acute Cardiovasc Care*. 2016;5(6):399-408. doi:10.1177/2048872616642952
 36. Kreuzinger P, Wildi K, Twerenbold R, et al. Incidence and Predictors of Cardiomyocyte Injury in Elective Coronary Angiography. *Am J Med*. 2016;129(5). doi:10.1016/j.amjmed.2015.12.010
 37. Giménez MR, Twerenbold R, Boeddinghaus J, et al. Clinical Effect of Sex-Specific Cutoff Values of High-Sensitivity Cardiac Troponin T in Suspected Myocardial Infarction. 2016. doi:10.1001/jamacardio.2016.2882
 38. Wildi K, Nelles B, Twerenbold R, et al. Safety and efficacy of the 0 h/3 h protocol for rapid rule out of myocardial infarction. *Am Heart J*. 2016;181:16-25. doi:10.1016/j.ahj.2016.07.013
 39. Klinkenberg LJJ, Wildi K, van der Linden N, et al. Diurnal Rhythm of Cardiac Troponin: Consequences for the Diagnosis of Acute Myocardial Infarction. *Clin Chem*. 2016;62(12).
 40. Mauermann E, Bolliger D, Seeberger E, et al. Incremental Value of Preoperative Copeptin for Predicting Myocardial Injury. *Anesth Analg*. 2016;123(6):1363-1371. doi:10.1213/ANE.0000000000001635
 41. Twerenbold R, Jaeger C, Rubini Gimenez M, et al. Impact of high-sensitivity cardiac troponin on use of coronary angiography, cardiac stress testing, and time to discharge in suspected acute myocardial infarction. *Eur Heart J*. 2016;37(44):3324-3332. doi:10.1093/eurheartj/ehw232
 42. Boeddinghaus J, Nestelberger T, Twerenbold R, et al. Direct Comparison of Four Very Early Rule-Out Strategies for Acute Myocardial Infarction Using High-Sensitivity Cardiac Troponin I. *Circulation*. 2017;135(17). doi:10.1161/CIRCULATIONAHA.116.025661
 43. Wagener M, Abächerli R, Honegger U, et al. Diagnostic and Prognostic Value of Lead aVR During Exercise Testing in Patients Suspected of Having Myocardial Ischemia. *Am J Cardiol*. 2017;119(7):959-966. doi:10.1016/j.amjcard.2016.11.056
 44. Hillinger P, Twerenbold R, Wildi K, et al. Gender-specific uncertainties in the diagnosis of acute coronary syndrome. *Clin Res Cardiol*. 2017;106(1):28-37. doi:10.1007/s00392-016-1020-y
 45. Breidthardt T, Weidmann ZM, Twerenbold R, et al. Impact of haemoconcentration during acute heart failure therapy on mortality and its relationship with worsening renal function. *Eur J Heart Fail*. 2017;19(2):226-236. doi:10.1002/ejhf.667
 46. Nestelberger T, Boeddinghaus J, Badertscher P, et al. Effect of Definition on Incidence and Prognosis of Type 2 Myocardial Infarction. *J Am Coll Cardiol*. 2017;70(13):1558-1568. doi:10.1016/J.JACC.2017.07.774
 47. Trendelenburg M, Stallone F, Pershyna K, et al. Complement activation products in acute heart failure: Potential role in pathophysiology, responses to treatment and impacts on long-term survival. *Eur Hear J Acute Cardiovasc Care*. February 2017:204887261769467. doi:10.1177/2048872617694674
 48. Badertscher P, Nestelberger T, de Lavallaz JFJ du F, et al. Prohormones in the Early Diagnosis of Cardiac Syncope. *J Am Heart Assoc*. 2017;6(12):e006592. doi:10.1161/JAHA.117.006592
 49. Kaier TE, Twerenbold R, Puelacher C, et al. Direct Comparison of Cardiac Myosin-Binding Protein C With Cardiac Troponins for the Early Diagnosis of Acute Myocardial Infarction. *Circulation*. 2017;136(16):1495-1508. doi:10.1161/CIRCULATIONAHA.117.028084
 50. Boeddinghaus J, Reichlin T, Nestelberger T, et al. Early diagnosis of acute myocardial infarction in patients with mild elevations of cardiac troponin. *Clin Res Cardiol*. 2017;106(6):457-467. doi:10.1007/s00392-016-1075-9
 51. Abächerli R, Twerenbold R, Boeddinghaus J, et al. Diagnostic and prognostic values of the V-index, a novel ECG marker quantifying spatial heterogeneity of ventricular repolarization, in

- patients with symptoms suggestive of non-ST-elevation myocardial infarction. *Int J Cardiol.* 2017;236:23-29. doi:10.1016/j.ijcard.2017.01.151
52. Wildi K, Cullen L, Twerenbold R, et al. Direct Comparison of 2 Rule-Out Strategies for Acute Myocardial Infarction: 2-h Accelerated Diagnostic Protocol vs 2-h Algorithm. *Clin Chem.* 2017;63(7):clinchem.2016.268359. doi:10.1373/clinchem.2016.268359
 53. Yu PC, Calderaro D, Gualandro DM, et al. Non-Cardiac Surgery in Developing Countries: Epidemiological Aspects and Economical Opportunities – The Case of Brazil. McCulloch P, ed. *PLoS One.* 2010;5(5):e10607. doi:10.1371/journal.pone.0010607
 54. Cupa J, Strebel I, Badertscher P, et al. Diagnostic and prognostic value of QRS duration and QTc interval in patients with suspected myocardial infarction. *Cardiol J.* 2018;25(5):601-610. doi:10.5603/CJ.a2018.0033
 55. Badertscher P, Boeddinghaus J, Twerenbold R, et al. Direct Comparison of the 0/1h and 0/3h Algorithms for Early Rule-Out of Acute Myocardial Infarction. *Circulation.* 2018;137(23):2536-2538. doi:10.1161/CIRCULATIONAHA.118.034260
 56. Boeddinghaus J, Twerenbold R, Nestelberger T, et al. Clinical Validation of a Novel High-Sensitivity Cardiac Troponin I Assay for Early Diagnosis of Acute Myocardial Infarction. *Clin Chem.* 2018;64(9):1347-1360. doi:10.1373/clinchem.2018.286906
 57. Wildi K, Singeisen H, Twerenbold R, et al. Circadian rhythm of cardiac troponin I and its clinical impact on the diagnostic accuracy for acute myocardial infarction. *Int J Cardiol.* 2018;270:14-20. doi:10.1016/j.ijcard.2018.05.136
 58. Badertscher P, Boeddinghaus J, Nestelberger T, et al. Effect of Acute Coronary Syndrome Probability on Diagnostic and Prognostic Performance of High-Sensitivity Cardiac Troponin. *Clin Chem.* 2018;64(3):515-525. doi:10.1373/clinchem.2017.279513
 59. Strebel I, Twerenbold R, Boeddinghaus J, et al. Diagnostic value of the cardiac electrical biomarker, a novel ECG marker indicating myocardial injury, in patients with symptoms suggestive of non-ST-elevation myocardial infarction. *Ann Noninvasive Electrocardiol.* 2018;23(November 2017):e12538. doi:10.1111/anec.12538
 60. Breidhardt T, Moreno-Weidmann Z, Uthoff H, et al. How accurate is clinical assessment of neck veins in the estimation of central venous pressure in acute heart failure? Insights from a prospective study. *Eur J Heart Fail.* 2018;20(7):1160-1162. doi:10.1002/ejhf.1111
 61. Keller F, Dhaini S, Briel M, et al. How to conceptualize and implement a PhD program in Health Sciences – The Basel approach. *J Med Educ Curric Dev.* 2018;in press:238212051877136. doi:10.1177/2382120518771364
 62. Badertscher P, Strebel I, Honegger U, et al. Automatically computed ECG algorithm for the quantification of myocardial scar and the prediction of mortality. *Clin Res Cardiol.* 2018;107(9):824-835. doi:10.1007/s00392-018-1253-z
 63. Twerenbold R, Neumann JT, Sørensen NA, et al. Prospective Validation of the 0/1-h Algorithm for Early Diagnosis of Myocardial Infarction. *J Am Coll Cardiol.* 2018;72(6):620-632. doi:10.1016/j.jacc.2018.05.040
 64. Mueller D, Puelacher C, Honegger U, et al. Direct Comparison of Cardiac Troponin T and I Using a Uniform and a Sex-Specific Approach in the Detection of Functionally Relevant Coronary Artery Disease. *Clin Chem.* 2018;64(11):1596-1606. doi:10.1373/clinchem.2018.286971
 65. du Fay de Lavallaz J, Badertscher P, Nestelberger T, et al. Prospective validation of prognostic and diagnostic syncope scores in the emergency department. *Int J Cardiol.* 2018;269:114-121. doi:10.1016/j.ijcard.2018.06.088
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 67. Kaier TE, Twerenbold R, Puelacher C, et al. Response by Kaier et al to Letter Regarding Article, “Direct Comparison of Cardiac Myosin-Binding Protein C With Cardiac Troponins for the Early Diagnosis of Acute Myocardial Infarction.” *Circulation.* 2018;138(5):544-545.

- doi:10.1161/CIRCULATIONAHA.118.035880
68. Walter JE, Honegger U, Puelacher C, et al. Prospective Validation of a Biomarker-Based Rule Out Strategy for Functionally Relevant Coronary Artery Disease. 2018;64(2):386-395. doi:10.1373/clinchem.2017.277210
 69. Twerenbold R, Badertscher P, Boeddinghaus J, et al. 0/1-Hour Triage Algorithm for Myocardial Infarction in Patients With Renal Dysfunction. *Circulation*. 2018;137(5):436-451. doi:10.1161/CIRCULATIONAHA.117.028901
 70. Hortmann M, Walter JE, Benning L, et al. Droplet digital PCR of serum miR-499, miR-21 and miR-208a for the detection of functionally relevant coronary artery disease. *Int J Cardiol*. 2019;275:129-135. doi:10.1016/j.ijcard.2018.08.031
 71. Du Fay De Lavallaz J, Badertscher P, Nestelberger T, et al. Circadian, weekly, seasonal, and temperature-dependent patterns of syncope aetiology in patients at increased risk of cardiac syncope. *Europace*. 2019;21(3):511-521. doi:10.1093/europace/euy186
 72. Honegger U, Walter JE, Mueller D, et al. Prevalence and determinants of exercise-induced left ventricular dysfunction in patients with coronary artery disease. *Eur J Clin Invest*. 2019;49(6):e13112. doi:10.1111/eci.13112
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 76. Kozhuharov N, Sabti Z, Wussler D, et al. Prospective validation of N-terminal pro B-type natriuretic peptide cut-off concentrations for the diagnosis of acute heart failure. *Eur J Heart Fail*. 2019;21(6):813-815. doi:10.1002/ejhf.1471
 77. Hillinger P, Strebel I, Abächerli R, et al. Prospective validation of current quantitative electrocardiographic criteria for ST-elevation myocardial infarction. *Int J Cardiol*. 2019;292:1-12. doi:10.1016/j.ijcard.2019.04.041
 78. Nestelberger T, Cullen L, Lindahl B, et al. Diagnosis of acute myocardial infarction in the presence of left bundle branch block. *Heart*. 2019;105(20):1559-1567. doi:10.1136/heartjnl-2018-314673
 79. Twerenbold R, Costabel JP, Nestelberger T, et al. Outcome of Applying the ESC 0/1-hour Algorithm in Patients With Suspected Myocardial Infarction. *J Am Coll Cardiol*. 2019;74(4):483-494. doi:10.1016/j.jacc.2019.05.046
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 83. Gualandro DM, Twerenbold R, Boeddinghaus J, Nestelberger T, Puelacher C, Müller C. Biomarkers in cardiovascular medicine: towards precision medicine. *Swiss Med Wkly*. 2019;149:w20125. doi:10.4414/smw.2019.20125
 84. Kozhuharov N, Goudev A, Flores D, et al. Effect of a Strategy of Comprehensive Vasodilation vs Usual Care on Mortality and Heart Failure Rehospitalization among Patients with Acute Heart

- Failure: The GALACTIC Randomized Clinical Trial. *JAMA - J Am Med Assoc.* 2019;322(23):2292-2302. doi:10.1001/jama.2019.18598
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 91. Kleber M, Kozhuharov N, Sabti Z, et al. Relative hypochromia and mortality in acute heart failure. *Int J Cardiol.* 2019;286:104-110. doi:10.1016/j.ijcard.2019.02.060
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Peer reviewed books and conference proceedings

None

Contribution to books

None

Patents and licenses

None

Oral contributions to international conferences

Speaker: GREAT 2014, ESC 2015, SGK 2015, GREAT 2015, ESC 2016, GREAT 2016, Clinical Research Day 2017, PCC 2018, IGM 2019,

Posterpresenter: ESC 2014, ACCA 2014, IGM 2015, SGK 2015, ESC 2015, Clinical Research day 2016, IGM 2017, PCC 2018, ESC 2018, ESC 2019, IGM 2020

Outreach activities

Outreach events ScienceSlamClub Basel, organisation and participation in events from 2014-2017, president from 2016-2017

Social Media Twitter @ChristianPuel

Other artefacts with documented use

None